

CLAIMS

## WHAT IS CLAIMED IS:

- 5        1. A poly(trimethylene-ethylene ether) ester amide comprising poly(trimethylene-ethylene ether) soft segment and a polyamide hard segment.
- 10      2. The poly(trimethylene-ethylene ether) ester amide of claim 1, comprising polyamide hard segments joined by ester linkages to poly(trimethylene-ethylene ether) soft segments.
- 15      3. The poly(trimethylene-ethylene ether) ester amide of claim 2, wherein the polyamide hard segment is the reaction product of carboxyl terminated polyamide or diacid anhydride, diacid chloride or diester acid equivalent thereof and poly(trimethylene-ethylene ether) glycol.
- 20      4. The poly(trimethylene-ethylene ether) ester amide of claim 3, wherein the polyamide hard segment is the reaction product of carboxyl terminated polyamide and poly(trimethylene-ethylene ether) glycol .
- 25      5. The poly(trimethylene-ethylene ether) ester amide of claim 4, wherein the carboxyl terminated polyamide is the polycondensation product of lactam, amino-acid or a combination thereof with dicarboxylic acid.
- 30      6. The poly(trimethylene-ethylene ether) ester amide of claim 5, wherein the carboxyl terminated polyamide is the polycondensation product of C<sub>4</sub>-C<sub>14</sub> lactam with C<sub>4</sub>-C<sub>14</sub> dicarboxylic acid.
7. The poly(trimethylene-ethylene ether) ester amide of claim 1, wherein the polyamide is the polycondensation product of amino-acid with dicarboxylic acid.
8. The poly(trimethylene-ethylene ether) ester amide of claim 7, wherein the polyamide is the polycondensation product of C<sub>4</sub>-C<sub>14</sub> amino acid and C<sub>4</sub>-C<sub>14</sub> dicarboxylic acid.

9. The poly(trimethylene-ethylene ether) amide of claim 1, wherein the polyamide is the polycondensation product of dicarboxylic acid and diamine.

5 10. The poly(trimethylene-ethylene ether) ester amide of claim 9, wherein the polyamide is the polycondensation product of C<sub>4</sub>-C<sub>14</sub> alkyl dicarboxylic acid and C<sub>4</sub>-C<sub>14</sub> diamine.

11. The poly(trimethylene-ethylene ether) ester amide of claim 1, wherein the polyamide segment has an average molar mass of at least about 300.

10 12. The poly(trimethylene-ethylene ether) ester amide of claim 11, wherein the polyamide segment has an average molar mass of about 400 to about 5,000.

15 13. The poly(trimethylene-ethylene ether) ester amide of claim 1, wherein the soft segment has number average molecular weight of about 250- to about 10,000.

14. The poly(trimethylene-ethylene ether) ester amide of claim 1, wherein the soft segment has number average molecular weight of about 1,000- to about 5,000.

20 15. The poly(trimethylene-ethylene ether) ester amide of claim 1, comprising 1 up to about 60 polyalkylene ether ester amide repeat units.

25 16. The poly(trimethylene-ethylene ether) ester amide of claim 1, comprising about 10 to about 60 weight % hard segment and about 90 to about 40 weight % soft segment.

17. The poly(trimethylene-ethylene ether) ester amide of claim 14, comprising about 15 to about 40 weight % hard segment and about 85 to about 60 weight % soft segment.

30 18. A shaped article prepared from poly(trimethylene-ethylene ether) ester amide comprising a soft segment from poly(trimethylene-ethylene ether) glycol and a polyamide hard segment.

19. The shaped article of claim 18, selected from fibers, fabrics and films.